

REMARKS/ARGUMENTS

Claims 1 - 20 are pending in the present application. Claims 11, 18 and 19 are hereby amended. Claims 1 - 10, and 12 - 17 are hereby canceled without prejudice or disclaimer. Applicants reserve the right to file a continuation application with respect to these claims. Claim 20 is withdrawn in view of the Restriction Requirement discussed with Examiner in the telephone conversation of May 4, 2004. New claims 21 - 36 are added. Support for the amendments to the claims and for the new claims can be found in the original claims.

Restriction Requirement

The Examiner contacted Applicant's attorney restricting the claims of the present application to three inventions:

- I. Claims 1-19, drawn to a polymer and a method of making thereof, classified in class 526, subclass 317.1+; and
- II. Claim 20, drawn to a kit comprising monomers, classified in class 524, subclass 492+.

In a telephone conference with the Examiner on May 4, 2004, the undersigned attorney made a provisional election, without traverse, to prosecute the invention of Group I, claims 1-19. Applicant hereby affirms election of group I, claims 1-13, without traverse. In view of the examiner's earlier restriction requirement, applicant retains the right to present claim 20 in a divisional application.

Rejection under 35 U.S.C. § 112, Second Paragraph

Claim 12 was rejected under 35 U.S.C. 112, second paragraph as indefinite with respect to specifying a particular average molecular weight "since it is dependent on the polydispersity." Claim 12 is hereby canceled, so the rejection is moot with respect to claim 12. Amended claims 11, 18, and 19, however, recite the same language, so Applicants address this rejection. Applicants respectfully disagree with the Examiner. MPEP § 2173.04 sets forth the essential inquiry pertaining to the definiteness requirement, which is "whether the claims set out and

circumscribe a particular subject matter with a reasonable degree of certainty and particularity.” § 2173.04 goes on to explain that if the claim, as a whole, “apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent,” then that claim is definite. Applicants respectfully assert that the phrase “wherein the polymer has an average molecular weight in the range of about 10,000 to about 100,000” adequately serves the notice function required by 35 U.S.C. 112, second paragraph, and request that this rejection be withdrawn.

Rejections under 35 U.S.C. 102 and 103

Claims 1, 4-11, 13, 15, 18 and 19 are rejected under 35 U.S.C. 102(a) or, in the alternative, under 35 U.S.C. 103(a) over Culbertson *et al.* (ACS Symposium Series, 755, 2000, pp. 222-232.) Claims 1-4, 6-10, 15 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by Mallya *et al.* (US Pat. No. 4,812,541, hereinafter referred to as “Mallya.”) Claims 1, 4, 6, 8-10 and 15 are rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, as obvious over Chen *et al.* (US Pat. No. 5,296,218, hereinafter referred to as “Chen.”) Claims 1, 4-11, 15, 18 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, as obvious over Xie *et al.*, (J.M.S.-Pure Appl. Chem., A35(4), pp. 547-561, (1998.)) Claims 1, 4-13, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as obvious over Xie *et al.*, (J.M.S.-Pure Appl. Chem., A35(4), pp. 547-561, 1998) in view of Culbertson *et al.*, (ACS Symposium Series, 755, 2000, pp. 222-232, Culbertson *et al.* (US Pat. No. 5,369,142) or Lu *et al.* (US 2001/0051671 A1, hereinafter referred to as “Lu.”) Claims 1-12 and 14-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Xie *et al.* (J.M.S.-Pure. Appl. Chem., A35(10), pp. 1631-1650 (1998.)) Claims 1-19 are rejected under 35 U.S.C. 103 as obvious over Xie *et al.* (J.M.S.-Pure. Appl. Chem., A35(10), pp. 1631-1650 (1998)) in view of Culbertson *et al.* (ACS Symposium Series, 755, 2000, pp. 222-232), Culbertson *et al.* (US Pat. No. 5,369,142, hereinafter referred to as “Culbertson”) or Lu *et al.* (US 2001/0051671 A1). Claims 1, 5, 8-13, 15, 18 and 19 are rejected under 35 U.S.C. 102(b) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Culbertson *et al.* (US Pat. No. 5,369,142). Claims 1-5 and 8-19 are rejected under 35 U.S.C. 103(a) over Culbertson *et al.* (US Pat. No. 5,369,142) in view of

Mitra (US Patent No. 5,925,715, hereinafter referred to as "Mitra") or Xie *et al.* (J.M.S.-Pure. Appl. Chem., A35(10), pp. 1631-1650 (1998.))

Claims 1 - 10, and 12 - 17 are hereby canceled without prejudice or disclaimer, accordingly, rejections of these claims are hereby moot. Claims 11, 18, and 19 as amended are novel over the prior art of record. None of the references recite a dental restorative comprising a polymer of having a backbone structure comprising a first monomer unit comprising a carboxylic acid-functionalized vinyl monomer; a second monomer unit comprising a vinyl amide; and a free-radical or visible light curable moiety selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate pendant to the polymer, having a molecular weight in the range of about 10,000 to about 100,000 and a calcium fluoroaluminosilicate glass.

None of the references recite a method for preparing a dental restorative comprising the steps of first, blending reactants comprising a polymer having an average molecular weight in the range from 10,000 to 100,000, formed from at least one carboxylic acid-containing vinyl monomer and at least one vinyl amide monomer; and having a free-radical or visible light curable moiety, selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate, pendant to the polymer, and a calcium fluoroaluminosilicate glass powder, second, applying the blended reactants to a dental area in need of restoration; and third curing the applied blended reactants.

None of the references recite a kit for use in making dental restoratives comprising a polymer comprising carboxylic acid groups, amide groups; and a free-radical or visible light curable moiety pendant to the polymer, the free-radical or visible light curable moiety selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate; and wherein the polymer has an average molecular weight in the range of about 10,000 to about 100,000; and a calcium fluoroaluminosilicate glass; wherein the dental restorative is made by blending the polymer with the inorganic glass powder.

Since none of the references teach every element of claims 11, 18, or 19, as amended, or the claims depending thereon, these claims are novel over the prior art of record.

The claims pending in this application are also non-obvious over the prior art of record. Culbertson *et al.* (ACS Symposium Series, 755, 2000, pp. 222-232) does not teach or suggest every element of claims 11, 18, or 19. Specifically, it does not teach or suggest a free-radical or visible light curable moiety pendant to the polymer backbone, nor does it teach or suggest polymers with an average molecular weight in the range from 10,000 to 100,000. Mallya does not teach or suggest polymers with an average molecular weight in the range from 10,000 to 100,000, but rather, polymers with an average molecular weight of "at least about 200,000, preferably from about 200,000 to 500,000. (See, Mallya, col. 3, lines 33-35.) Chen does not teach or suggest dental restoratives, methods for preparing dental restoratives, or kits for dental restoratives. Chen does not teach or suggest a free-radical or visible light curable moiety pendant to the polymer backbone, nor does it teach or suggest polymers with an average molecular weight in the range from 10,000 to 100,000.

Xie *et al.*, (J.M.S.-Pure Appl. Chem., A35(4), pp. 547-561, 1998) does not teach or suggest a free-radical or visible light curable moiety pendant to the polymer backbone, nor does it teach or suggest polymers with an average molecular weight in the range from 10,000 to 100,000. Similarly, Xie *et al.*, (J.M.S.-Pure Appl. Chem., A35(4), pp. 547-561, 1998) in view of Culbertson or Lu does not teach or suggest a free-radical or visible light curable moiety pendant to the polymer backbone. Claims 11, 18, and 19 are non-obvious over Xie *et al.* (J.M.S.-Pure Appl. Chem., A35(10), pp. 1631-1650 (1998)) as it does not teach or suggest every limitation in those claims, for example, it does not teach or suggest the use of calcium fluoroaluminosilicate glass in a dental restorative, in a method of making a dental restorative, or in a kit for use in making a dental restorative. Xie *et al.* (J.M.S.-Pure Appl. Chem., A35(10), pp. 1631-1650 (1998)) in view of Culbertson *et al.* (ACS Symposium Series, 755, 2000, pp. 222-232), Culbertson or Lu, or any combination thereof, does not teach or suggest a kit for use in making dental restoratives comprising a polymer comprising carboxylic acid groups, amide groups; and a free-radical or visible light curable moiety pendant to the polymer, the free-radical or visible light curable moiety selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate; and wherein the polymer has an average molecular weight in the range of about 10,000 to about 100,000; and a calcium fluoroaluminosilicate glass; wherein the dental restorative is made by blending the polymer with

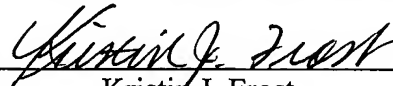
the inorganic glass powder. Similarly, the combination of Claims 1-5 and 8-19 are rejected under 35 U.S.C. 103(a) over Culbertson *et al.* (US Pat. No. 5,369,142) in view of Mitra (US Patent No. 5,925,715, hereinafter referred to as "Mitra") or Xie *et al.* (J.M.S.-Pure. Appl. Chem., A35(10), pp. 1631-1650 (1998)) does not teach or suggest a kit for use in making dental restoratives comprising a polymer comprising carboxylic acid groups, amide groups; and a free-radical or visible light curable moiety pendant to the polymer, the free-radical or visible light curable moiety selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate; and wherein the polymer has an average molecular weight in the range of about 10,000 to about 100,000; and a calcium fluoroaluminosilicate glass; wherein the dental restorative is made by blending the polymer with the inorganic glass powder.

Culbertson does not teach or suggest a free-radical or visible light curable moiety selected from vinyl-substituted unsaturated cyclic imino ethers, 2-isocyanatoethyl methacrylate, and glycidyl methacrylate pendant to the polymer backbone, nor does it teach or suggest teach or suggest the use of calcium fluoroaluminosilicate glass in a dental restorative, in a method of making a dental restorative, or in a kit for use in making a dental restorative.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

CALFEE, HALTER & GRISWOLD LLP

By 
Kristin J. Frost
Reg. No. 50,627
Tel.: (216) 622-8895